

Remarks:

Reconsideration of the application is requested.

Claims 1, 5, 6, and 8 remain in the application. Claim 1 has been amended. A marked-up version of the claim is attached hereto on a separate page. Claims 2, 3, 4, and 7 have been canceled.

In the third item on page 2 of the above-identified Office Action, claims 1 and 8 have been rejected as being anticipated by Yamada et al. (U.S. Patent 4,986,215) under 35 U.S.C. § 102(b).

The rejection has been noted and claim 1 has been amended in an effort to even more clearly define the invention of the instant application. Support for the changes is found in the original dependent claims 2, 3, 4, and 7, and in particular, support for the feature that the wafer contacts the susceptor at the wafer perimeter only is found on page 9, lines 1-3 and page 10, lines 5-8 of the specification of the instant application.

Before discussing the prior art in detail, it is believed that a brief review of the invention as claimed, would be helpful. Claim 1 calls for, *inter alia*, a susceptor for supporting a

semiconductor wafer with a diameter of at least 300mm and a perimeter edge, and

a surface for supporting the semiconductor wafer and having a concave shape and being configured to cause the wafer to contact the surface only at the perimeter edge, the surface having an outer portion surrounding a center portion, defining a distance between the center portion and a circle extending through the outer portion, the circle having a diameter of substantially 300mm and the distance being greater than 500um.

The Yamada et al. reference discloses a susceptor 1 for supporting a substrate 7. The susceptor has a circular edge 6, which defines a concave inner space 4. The substrate is in line contact with the edge 6. The edge or ridge 6 supports the substrate at an area inwardly displaced from the perimeter of the substrate, as shown in Fig 3A. The reference discloses that the substrate may have a diameter of 150mm and that the distance between the center portion of the concave surface is in the range of 25 $\mu$ m to 150 $\mu$ m. If one considers the dimensions of Yamada et al. as important, which they are, then it requires more than "routine optimization" to change such dimensions to meet claimed limitations. While Fig. 8C shows a wafer supported by the concave surface of the susceptor, there is no disclosure of any dimensions for the wafer per se or the distance between the wafer and the center portion of the concave surface.

Clearly, Yamada et al. do not show or teach a susceptor for supporting a "semiconductor wafer having a diameter of at least 300mm and a perimeter edge" in which the susceptor has "a surface for supporting the semiconductor wafer, said surface having a concave shape and being configured to cause the semiconductor wafer to contact said surface at the perimeter edge only, said surface having a center portion and an outer portion surrounding said center portion, defining a distance between said center portion and a plane defined by a circle along said outer portion, said circle having a diameter of substantially 300mm and said distance being greater than 500um," as recited in claim 1 of the instant application.

Claim 1 now recites specific dimensions for the present invention. Yamada et al. do not disclose such specific dimensions nor would it be obvious for one skilled in the art to arrive at such dimensions through "routine optimization," as the Examiner stated in connection with the rejection of canceled claims 2, 3, 4 and 6, certain features of which have been incorporated into claim 1. As pointed out above, Yamada et al. actually teach away from providing the specific dimensions as recited in claim 1. The claimed dimensions are important features of the present invention that achieve the desired objectives described in the instant specification. For example, it is important that the claimed wafer have a

dimension of at least 300mm, not 150mm as disclosed in Yamada et al., in order to support only the perimeter of the wafer. This avoids movement of the wafer, particularly when the susceptor is hot. While the Examiner states that one of ordinary skill in the art would have been led to the claimed dimensions and spacing because they are "routine optimization," the Examiner cites no specific prior art in support of such statements. Moreover, the Examiner cites no prior art in support of his statement that he is "taking official notice" that the "use of 12 inch wafers" and "vapor phase growth at temperatures above 400 C" were known prior to applicant's invention. Merely making such conclusory statements without citing prior art in support thereof is an improper basis for rejection of the claims. "Official notice" is not a substitute for citing actual prior art in support of statements that features are well-known and also are properly combinable with another reference(s) used in rejecting a particular claim(s). When relying on what is asserted to be general knowledge to negate patentability, that knowledge must be articulated and placed on the record. One cannot rely on conclusory statements when dealing with particular combinations of prior art and specific claims, but must set forth the rationale on which it relies. Common knowledge and common sense are not substitutes for evidence. See In re Lee, 61 USPQ 2d (Fed. Cir. 2002).

In the fourth item on page 2 of the above-identified Office Action, claims 2, 3, 4, 6 and 7 have been rejected as being unpatentable over Yamada et al. as applied in the rejection of claims 1 and 8, and further in view of the Examiner's comments set forth on page 2 under 35 U.S.C. § 103(a).

Only claim 6 remains at issue, because claims 2,3,4, and 7 have been canceled.

Claim 6 depends from claim 1 and is believed patentable for the same reasons as discussed above.

In the first item on page 3 of the above-identified Office Action, claim 5 has been rejected as being unpatentable over Yamada et al. as applied in the rejection of claims 1 and 8, and further in view of Martin et al. (U.S. Patent 4,579,080) under 35 U.S.C. § 103(a).

The arguments presented above relative to Yamada et al. are applicable in the rejection of claim 5, which depends from claim 1.

While Martin et al. disclose that a susceptor 52 may be formed of graphite or another material such as molybdenum, the reference does not obviate the basic deficiencies of the

primary Yamada et al. reference. Therefore, claim 5, which depends from claim 1, is believed patentable for the same reasons as discussed relative to claim 1.

Applicant respectfully disagrees with the Examiner's dismissal and disregard of specific claimed features such as the claimed dimensions and spacing recited in claim 1 of the instant application. The prior art does not disclose or suggest providing specific dimensions and spacing of a semiconductor wafer and a susceptor for supporting the semiconductor wafer, namely, a "semiconductor wafer having a diameter of at least 300mm" and "a distance being defined between said center portion and a plane defined by a circle along said outer portion, said circle having a diameter of substantially 300mm and said distance being greater than 500um", as recited in the claim 1. It involves much more than routine skill as erroneously stated by the Examiner, to achieve the dimensional relationships of the claimed invention. The specific dimensions of the distance between the wafer and the center portion of the concave surface and that the surface of the susceptor is close enough to the backside of the wafer, which allows efficient heating to occur, are important features that enable the present claimed invention to obtain its desired advantages. The prior art does not teach or suggest such specific features. One skilled in the art could conceivably select any number of dimensions from an infinite multiplicity

of possibilities and still would not necessarily select those recited in the claims of the instant application without the benefit of hindsight. Applying the Examiner's reasoning is tantamount to saying that that no patentable weight should be given to claimed dimensions of claimed specific structural elements. Such is not the case and the Examiner's statements are not a proper basis for rejecting claimed features.

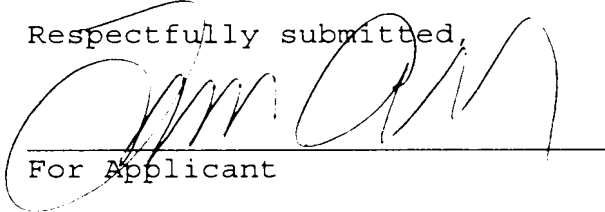
It is accordingly believed to be clear that none of the references, whether taken alone or in any combination, either show or suggest the features of claim 1. Claim 1 is, therefore, believed to be patentable over the art. The dependent claims are believed to be patentable as well because they all are ultimately dependent on claim 1.

In view of the foregoing, reconsideration and allowance of claims 1, 5, 6, and 8 are solicited.

In the event the Examiner should still find any of the claims to be unpatentable, counsel would appreciate receiving a telephone call so that, if possible, patentable language can be worked out.

Please charge any fees that might be due with respect to  
Sections 1.16 and 1.17 to the Deposit Account of Lerner and  
Greenberg, P.A., No. 12-1099.

• Respectfully submitted,



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Version With Markings to Show Changes Made:

Claim 1 (Amended). A susceptor for supporting a semiconductor wafer having a diameter of at least 300mm and a perimeter edge, the susceptor comprising:

a surface for supporting [a] the semiconductor wafer, said surface having a concave shape and being configured to cause the semiconductor wafer to contact said surface at the perimeter edge only, said surface having a center portion and an outer portion surrounding said center portion, defining a distance between said center portion and a plane defined by a circle along said outer portion, said circle having a diameter of substantially 300mm and said distance being greater than 500um; and

a heater thermally coupled to said surface for heating said surface.